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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,396	10/01/2003	Hiroshi Tanabe	Q77312	4416

7590 12/12/2005

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EXAMINER	
MOORE, KARLA A	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 12/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,396	TANABE ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/886,331.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,897,100 to Yamazaki et al. in view of U.S. Patent No. 5,183,547 to Ikeda.

4. Yamazaki et al. disclose a semiconductor manufacturing apparatus substantially as claimed in Figure 4 and comprising: a chamber capable of insulating thin film formation or etching (77; column 15, rows 58-60 and column 9, row 18), a chamber capable of laser irradiation (75), a chamber capable of hydrogen annealing (73) and transportation means (79, 80) for transporting a substrate (19) having planar dimensions of a substrate width by a substrate length, wherein each of said chambers and said transportation means are constituted such that said substrate on which a semiconductor device is formed can be transported among said chambers without exposure of said substrate to the air; and wherein said laser irradiation chamber includes

an irradiation system (11-13) and a vacuum chamber (column 5, rows 66-67) for accommodating the substrate. The vacuum chamber for laser irradiation has a window (14).

5. However, Yamazaki et al. fail to explicitly disclose a chamber for silicon thin film formation.

6. Yamazaki et al. do however teach that additional chambers are can be added as the need arises, for instance to perform a film formation step (see column 9, rows 22-27). At column 5, rows 22-32, Yamazaki et al. teach a similar system can comprise a plasma CVD chamber for depositing silicon. Each of the disclosed systems is provided with the processing chambers connected to a common transportation chamber so that substrates may be transported without being exposed to the outside air so that things to be processed are not polluted in the process (column 3, rows 19-22).

7. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional chamber capable of silicon thin film formation to the apparatus disclosed in Figure 4 of Yamazaki et al. in order to transport in process substrates without exposure to the outside air as taught by Yamazaki et al.

8. Yamazaki et al. further fail to explicitly disclose the vacuum chamber for laser irradiation has planar dimensions of a chamber length and a chamber width wherein at least one of the chamber length and chamber width is less than twice a respective length or width of the substrate.

9. Ikeda teaches that it is advantageous to form a vacuum chamber of reduced size (i.e. reduced dimensions) for the purpose of reducing the amount of floor space the chamber occupies, for reducing the size of the vacuum device used to exhaust the chamber and for shortening the discharging time (column 8, rows 35-43).

10. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a laser irradiation vacuum chamber of reduced dimensions in Yamazaki et al. in order to reduce the amount of floor space occupied by the vacuum chamber, reduce the size of the vacuum device used to exhaust the chamber and to shorten the discharge time as taught by Ikeda et al.

11. With respect to claim 6, the hydrogen annealing chamber is capable of introducing hydrogen during annealing to reduce dangling bonds (column 17, rows 8-16).

12. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. and Ikeda as applied to claims 1 and 6 above and further in view of U.S. Patent No. 4,529,617 to Chenevas-Paule et al.

13. Yamazaki et al. and Ikeda disclose a semiconductor manufacturing apparatus substantially as claimed and as described above.

14. However, Yamazaki et al. and Ikeda fail to explicitly teach the substrate held in a stationary position during laser irradiation in said laser irradiation chamber, wherein the irradiation system includes a laser and an optical system for shaping the laser beam, wherein a part of said optical system is movably disposed within said vacuum chamber such that said laser beam can be irradiated onto substantially the entire planar area of said substrate.

15. Chenevas-Paule et al. teach that any of a substrate, radiation source/laser or deflection mirrors/ an optical system positioned in the vacuum chamber (Figure 1, 12 and 14) can be displaced and the other two components held stationary for the purpose of carrying out a scan of part or all of a substrate surface (Figures 1 and 2; column 3, rows 23-34 and column 4 rows 11-14).

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's application was made to have provided a displaceable optical system/deflection mirrors and a stationary substrate in Yamazaki et al. and Ikeda in order to carry out a scan of part or all of a substrate surface as taught by Chenevas-Paule et al.

17. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. and Ikeda as applied to claims 1 and 6 above and further in view of U.S. Patent No. 5,424,244 to Zhang et al. (2).

18. Yamazaki et al. and Ikeda disclose a semiconductor manufacturing apparatus substantially as claimed and as described above.

19. However, Yamazaki et al. and Ikeda fail to disclose the specific dimensions of the window as claimed (i.e. corresponding to the area of the substrate).

20. Zhang et al. (2) teach a window sized to correspond to the dimensions of a substrate for the purpose of avoiding locating a movable substrate holder in the processing chamber, thus making the chamber free from the associated mechanical parts and dust (Figure 8A; column 14, rows 19-49).

21. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a window sized to correspond to the dimensions of the substrate in Yamazaki et al. and Ikeda in order to avoid locating a movable substrate holder in a processing chamber, thus making the chamber free from the associated mechanical parts and dust as taught by Zhang et al. (2).

22. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., Ikeda and Chenevas-Paule et al. as applied to claims 2 and 3 above and further in view of U.S. Patent No. 5,424,244 to Zhang et al. (2).

23. Yamazaki et al., Ikeda and Chenevas-Paule et al. disclose a semiconductor manufacturing apparatus substantially as claimed and as described above.

24. However, Yamazaki et al., Ikeda and Chenevas-Paule et al. fail to disclose the specific dimensions of the window as claimed (i.e. corresponding to the area of the substrate).

25. Zhang et al. (2) teach a window sized to correspond to the dimensions of a substrate for the purpose of avoiding locating a movable substrate holder in the processing chamber, thus making the chamber free from the associated mechanical parts and dust (Figure 8A; column 14, rows 19-49).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a window sized to correspond to the dimensions of the substrate in Yamazaki et al., Ikeda and Chenevas-Paule et al. in order to avoid locating a movable substrate holder in a processing chamber, thus making the chamber free from the associated mechanical parts and dust as taught by Zhang et al. (2).

Response to Arguments

27. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection, which more clearly disclose the claimed invention.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karla Moore
Patent Examiner
Art Unit 1763
6 December 2005